Navy Superconductivity Efforts

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Both the new high temperature superconductors (HTS) and the low temperature superconductors (LTS) are important components of the Navy's total plan to integrate superconductivity into field operational systems. Fundamental research is an important component of the total Navy program and focuses on the HTS materials. Power applications (ship propulsion, etc.) use LTS materials while space applications (MMW electronics, etc.) use HTS materials. The Space Experiment being conducted at NRL will involve space flight testing of HTS devices built by industry and will demonstrate the ability to engineer and space qualify these devices for systems use. Another important component of the Navy's effort is the development of Superconducting Quantum Interference Device (SQUID) magnetometers. This program will use LTS materials initially, but plans to implement HTS materials as soon as possible. Hybrid HTS/LTS systems are probable in many applications. In this presentation, a review of the status of the Navy's HTS materials research will be given as well as an update on the Navy's development efforts in superconductivity, with particular emphasis on the related SDIO-sponsored program on HTS applications.